

Kansas Behavioral Health Risk Bulletin

Kansas Department of Health and Environment



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Bureau of Chronic Disease and Health Promotion

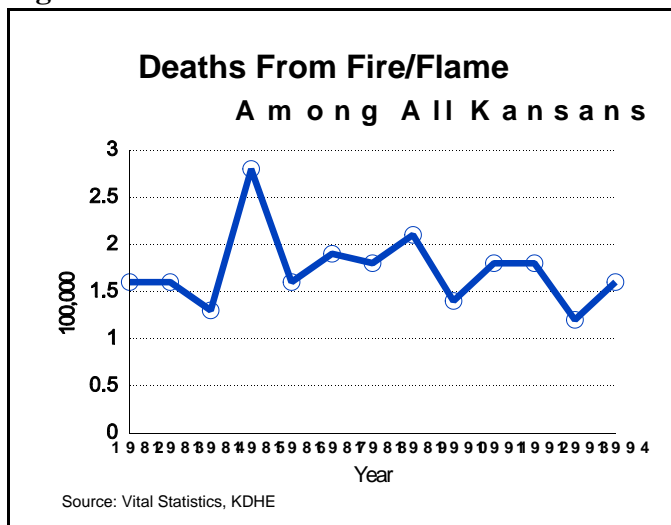
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Fire/Burn Injury in Kansas

Unintentional injuries are the fifth leading cause of death among Kansans, and the primary cause for those between ages 1-44. Injuries resulting from fire and flames are the third leading cause of all unintentional injury deaths, following motor vehicle crashes and falls.¹ Each year, Kansas fire service personnel respond to more than 15,000 fires, of which approximately one out of four are residential. The vast majority of residential fires occur within one family dwellings and are most frequently attributed to cooking, arson or heating origins, such as furnaces, fireplaces, and portable heaters.²

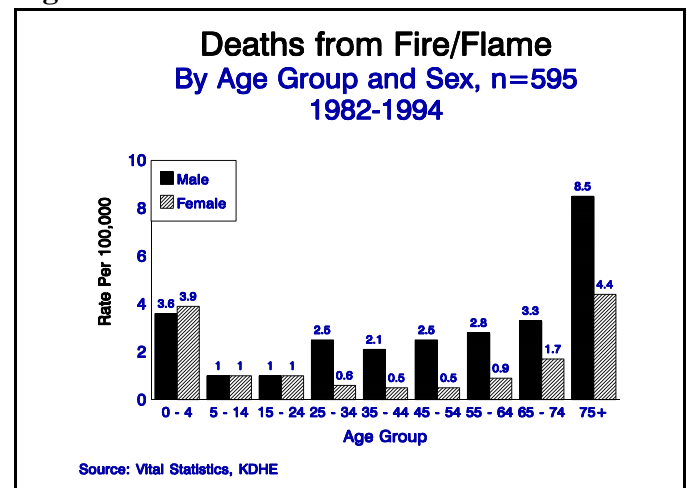
In Kansas, deaths from fire and flames occur most frequently among children under 5 years of age and persons age 65 and older (Fig. 2). Persons who live in rural areas, men, and African-Americans are also at increased risk of dying from a fire-related injury (Fig. 3). Children and the elderly are thought to be more susceptible because they are not as capable of escaping dangerous situations, while rural residents live at greater distances from emergency response teams.

Figure 1



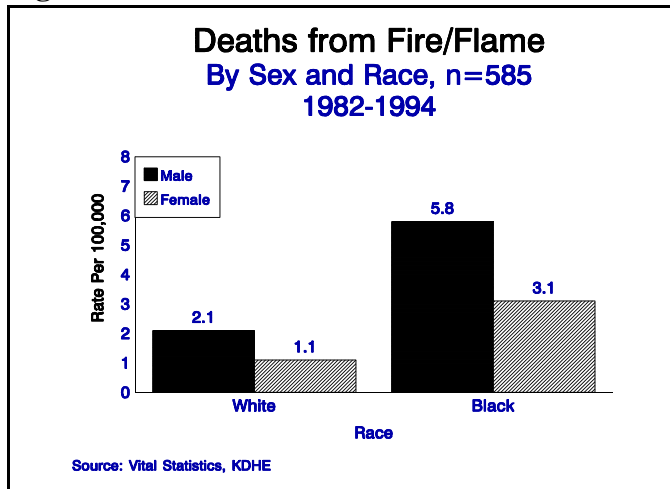
From 1982-1994, 595 people died from fire related injuries in Kansas. During this period of time, the overall age-adjusted mortality rate of 1.7 per 100,000 had not changed significantly (Fig. 1). Between 1986 and 1995, more than 2,800 people sustained 2nd or 3rd degree burn injuries requiring hospitalization within the state.³

Figure 2



One of the most effective ways to prevent fire related mortality is to correctly install and maintain smoke detectors. In 1994, 76% of Kansas residential fire deaths occurred in homes without smoke detectors.² Coordinating smoke detector placement with fire suppression devices, such as sprinkler systems, also enhances the likelihood of survival.

Figure 3



Some common residential fire hazards, such as substandard wiring, improper storage of flammable products, and dangerous or unusable exits can be eliminated by adherence to building codes.⁴ In certain areas, local building codes require smoke detectors to be installed in all new residential construction.

The U.S. Fire Administration and the Federal Emergency Management Agency recommend that smoke detectors be placed outside each sleeping area and on every additional level in the home. Batteries should be checked each month and replaced at least once a year. When conducting the monthly battery test, it is also a good time to clean the detector since dust and dirt can interfere with normal functioning.⁵ Hard wired detectors are powered by the home's electrical system, thereby eliminating the need for changing batteries altogether. A new smoke detector has just become available which is powered by a lithium battery with a 10 year life which, like the hard wired version, requires minimal maintenance. After 10 years, all smoke detector units should be completely replaced.

In 1994 and 1995, the Kansas Department of Health and Environment, Bureau of Chronic Disease and Health Promotion, conducted the Behavioral Risk Factor Surveillance System (BRFSS) survey to assess the prevalence of health behaviors among Kansans aged 18 years and older. All respondents were asked the following questions regarding fire safety:

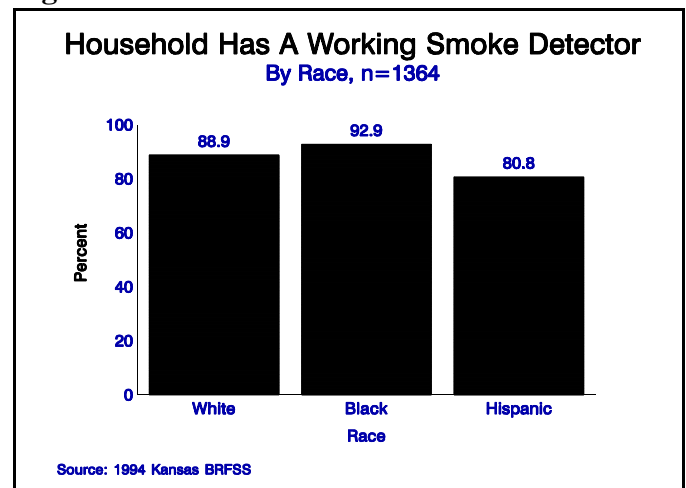
1. "Has your family practiced or discussed an escape plan in case of a fire at home?"

2. "Is there a working smoke detector in your household?"
3. "When was the last time you or someone else deliberately tested all of the smoke detectors in your home, either by pressing the test buttons or holding a source of smoke near them?"

This bulletin examines behaviors among Kansans associated with preventing injury and death from residential fires. Such behaviors are presented by household demographics including race, income, population density, and household members' ages.

Overall: According to the 1994 and 1995 BRFSS surveys, 88.7% of households reported having a working smoke detector. Of those with smoke detectors, 34.4% had tested their batteries within the past month. Another 38.1% had tested them within the past 6 months. Regarding at-home fire escape drills, 63.5% of households had previously practiced or discussed a fire escape plan.

Figure 4



Race (Figure 4): A greater proportion of Black households (92.9%) had working smoke detectors than White (88.9%) or Hispanic (80.8%) households.

Income (Figure 5): The presence of a working smoke detector increased directly with household income. Among households with an annual income greater than \$50,000, 95.5% reported having working smoke detectors, compared to 78.7% among households earning below \$15,000 per year.

Figure 5

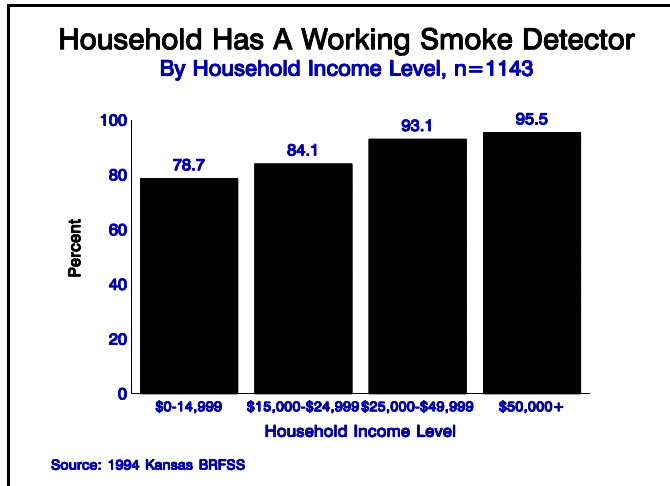
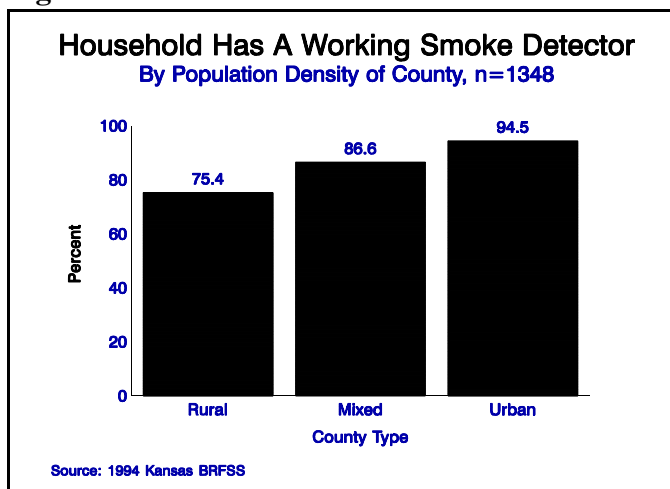


Figure 6



Population Density^A (Figure 6): Smoke detectors were more common among households located in more densely populated areas. Ninety-four percent of the households in urban counties reported having working smoke detectors, compared to 75.4% of rural households. Households in moderately populated counties fell between their urban and rural counterparts, with 86.6% having working smoke detectors.

Household Members Ages: Smoke detector status was assessed for the two highest risk age groups, children under the age of 5 and persons aged 65 and older. There was no significant difference between

households with children under the age of 5 and those without a child under age 5 regarding the presence of working smoke detectors. Ninety-three percent of homes with young children (age 0-4) reported having a working smoke detector, slightly higher than all other households (88%). However, respondents aged 65 and older were significantly less likely to report having working smoke detectors (83%) than non-elderly respondents (90%).

Conclusions: Based upon results of the 1994 and 1995 BRFSS surveys, the majority of Kansas households had working smoke detectors. This finding is consistent with previous studies in which 83% of U.S. households reported having smoke detectors; however, one-third of these detectors lacked working batteries.⁶ Though most Kansas households had smoke detectors, only a small proportion tested them on a monthly basis. Development of escape plans was substantially lower than the presence of smoke detectors.

Realizing that smoke detectors are already present in most homes, the Kansas Fire Injury Prevention Project has focused its attention on making sure they have working batteries. A prospective follow-up study has been designed and implemented to determine the characteristics and behaviors associated with proper smoke detector maintenance and planning for escape. The results of this study will be complete and made available during the summer of 1997.

Recommendations: The following recommendations are made to reduce fire-related injuries and deaths:

1. Install smoke detectors outside each sleeping area and on each livable floor of the home.
2. Test and clean smoke detectors once a month.
3. If battery operated, replace batteries in smoke detectors at least once per year.
4. Discuss and practice emergency escape plans throughout the home.
5. Target low income, elderly, and rural populations with appropriate education programs to improve smoke detector maintenance.

A Population density is defined as follows: an urban county has ≥ 150 persons per square mile, a mixed county has 20-149 persons per square mile, and a rural county has < 20 persons per square mile.

6. Develop community programs that provide instruction for burn prevention techniques, particularly for new parents and the elderly.

Healthy Kansans 2000 (Table 1): The following six objectives identified in Healthy Kansans 2000 are specifically associated with fire and burn injuries:

1. Reduce the age-adjusted residential fire death rate to 1.0 per 100,000 Kansans.
2. Reduce the residential fire death rate among youth aged 0 through 4 to 2.4 per 100,000.
3. Reduce the residential fire death rate among people aged 65 and older to 2.0 per 100,000.
4. Reduce the age-adjusted residential fire death rate among African American males to 4.3 per 100,000.
5. Reduce the age-adjusted residential fire death rate among African American females to 2.0 per 100,000.
6. Increase the proportion of persons who report having a working smoke detector in their home to 85%.

Table 1: Fire-Related Objectives

	Kansas Baseline	Status 1990-1994	HK 2000 Objective
Residential Fire Age- Adj Death Rate*	1.3	1.5	1.0
Residential Fire Death Rate Among 0-4 Year Olds*	3.1	3.3	2.4
Residential Fire Death Rate Among 65+ Year Olds*	2.6	2.8	2.0
Residential Fire Death Rate Among Black Males*	5.3	5.2	4.3
Residential Fire Death Rate Among Black Females*	3.0	2.0	2.0
Proportion of Persons with Working Smoke Detector	Not Available	88.7%**	85%

* per 100,000 people (1990 KS Vital Statistics data); ** 1994 KS BRFSS data

References:

1. KDHE, 1994 Vital Statistics.
2. KS State Fire Marshal, KS Fire Incident Reporting System, 1990-1995.
3. KS State Fire Marshal, KS Burn Injury Reporting System, 1986-1995.
4. National Committee for Injury Prevention and Control. Injury Prevention: Meeting the Challenge. New York (1989) pp. 145-176.
5. U.S. Fire Administration and Federal Emergency Management Agency. Protecting Your Family From Fire. 1993.
6. Baker, S.P., et al. The Injury Fact Book. New York: Oxford University Press, 1992.

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